NASA - SATS
Small Aircraft Transportation System Research Program

Oakland International Airport
Michigan, 11th Congressional District
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Outline

- **The Blueprint for 21st Century Aviation**
- **Leading Indicators for Technology Strategy**
- **National Consortium for Aviation Mobility**
- **SATS Research Program Status**
- **SATS Roadmaps**

Figure 2

The Aeronautics Blueprint

- A National Imperative -

- **The cost of inaction is gridlock, constrained mobility, unrealized economic growth, and loss of U.S. aviation leadership**

Figure 3

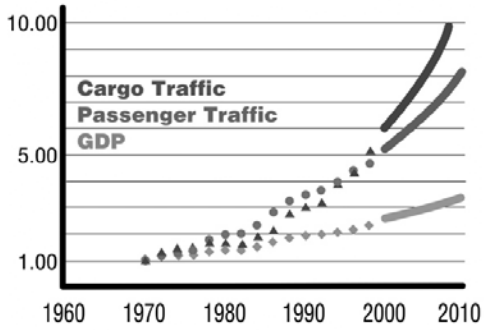
The Blueprint: Aviation is Critical to the U.S.

Economic Growth
- Productivity
- Global Competition
- Fullest Commercial Use

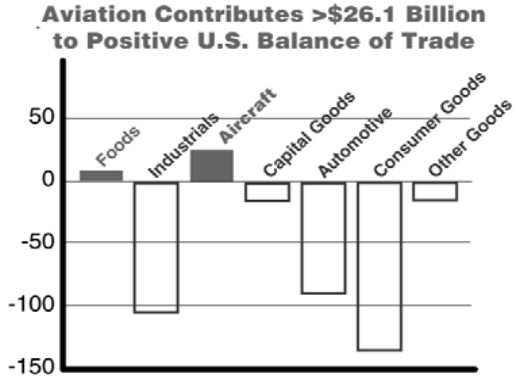
National Security
- Air Superiority
- Global Mobility

Quality of Life
- Freedom of Movement
- General Welfare

Aviation Contributes and Enables Economic Growth



Aviation Contributes >$26.1 Billion to Positive U.S. Balance of Trade



Balance of Trade by Manufacturing Sector for Year 2000

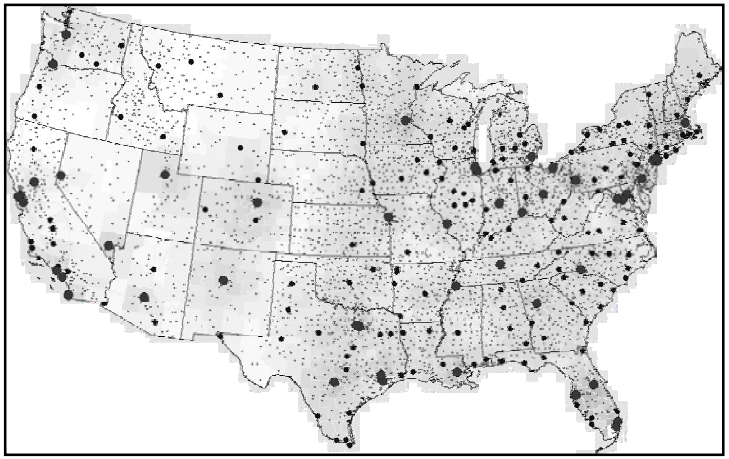
Figure 4

Equitable, On-Demand, Distributed Air Mobility

NASA Aerospace Enterprise

Revolutionize Aviation Goal

Mobility Objective



- **93% of population within 30 minutes of SATS-type airport**
- **41% within 30 minutes of any commercial airport**
- **22%within 30 minutes of major/hub airport**

Mobility
Enable people to travel faster and farther, anywhere, anytime

Performance
Less travel time at an affordable price

Accessibility
Safe reliable access to more locations, when & where you need it

Cost
User cost
System cost
Provider cost

Time
Doorstep to destination, with intermodal penalties

Availability
Convenient, on-demand, with mission reliability

Safety
Proven safer
Perceived safer

Figure 5

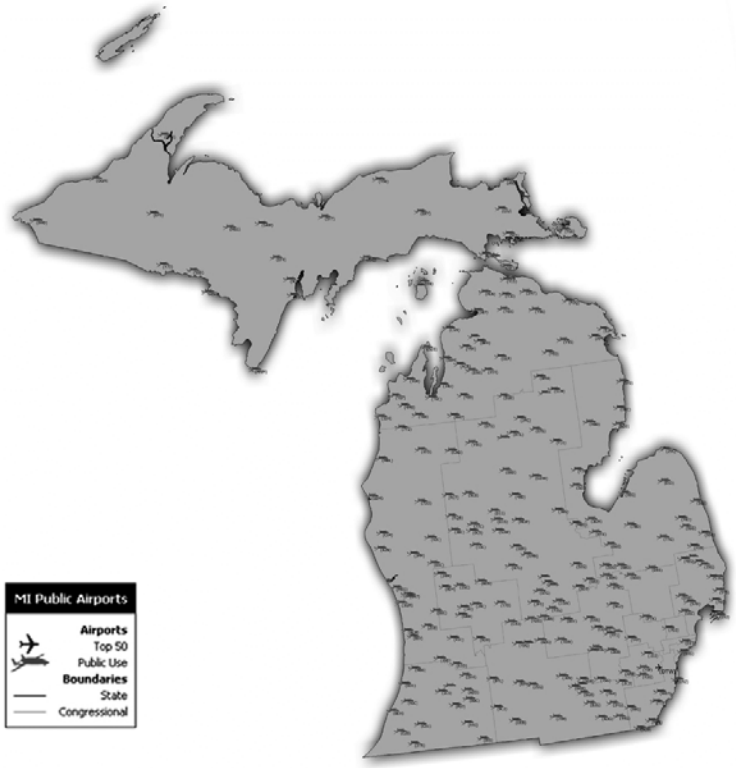
Market Pull for Increased Mobility

- **Booming Business Aircraft Market**
  - **Dramatic growth in fractional ownership (50%/year)**
- **New class of microjets**
  - **Low-cost: about $1.50/aircraft-mile**
  - **Designed to access small airports**
  - **On-demand services emerging in market**

And others….

Figure 6

SATS Accessibility in Michigan



Geographically equitable
air accessibility

Geographically equitable
economic opportunity

Figure 7

NASA and NCAM Partnership

Open Membership Structure for Additional State SATSLabs

Figure 8

Initial Four State SATSLabs

Selected Teams

- **NC & Upper Great Plains SATSLab**
- **Southeast SATSLab Consortium, Inc.**
- **Maryland SATSLab**
- **Virginia SATSLab**

Tasks (2001-2002)

- **2005 Demonstration Plans**
- **Technology Development Plans**
- **Transportation Analyses**
- **Systems Engineering**

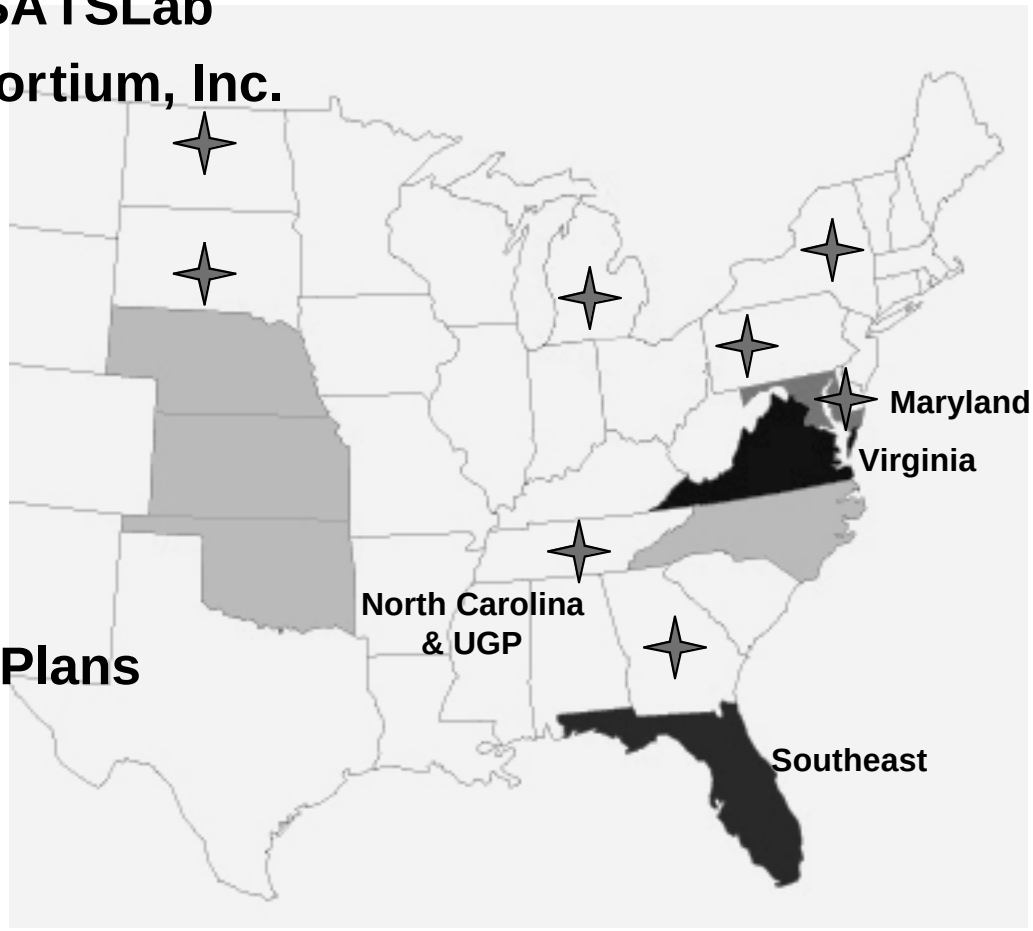
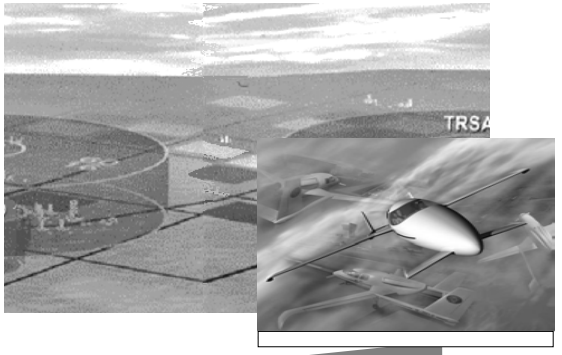


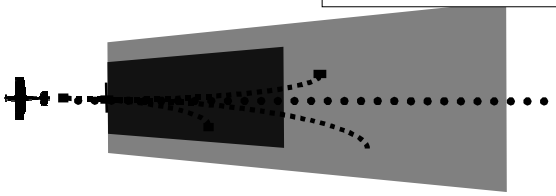
Figure 9

SATS Operating Capabilities

Higher Volume Operations in Non-Radar Airspace and at Non-Towered Airports



Lower Landing Minimums at Minimally Equipped Landing Facilities



Increase Single-Pilot Crew Safety & Mission Reliability

En Route Procedures & Systems for Integrated Fleet Operations

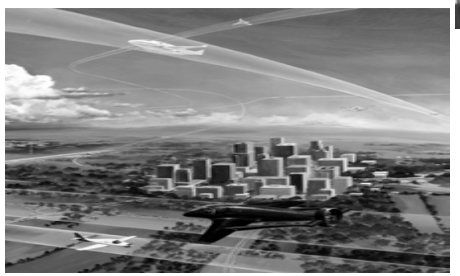


Figure 10

NASA SATS Research Aircraft

NASA Langley Technology on the Columbia 300

Human Factors
- Display Graphics Standards
- Sidestick Controller Guidelines
- Multi-Function Display Design

Aerodynamics
- Natural Laminar Flow Airfoil
- Stall/Spin Resistance Wing/Certification
- Optimized High-Lift System
- Cooling/Drag Optimization
- CFD Design Tools

Structures and Materials
- Streamlined Composite Manufacturing Processes
- Lightning Protection
- Crashworthy Seat Design
- Material Qualification

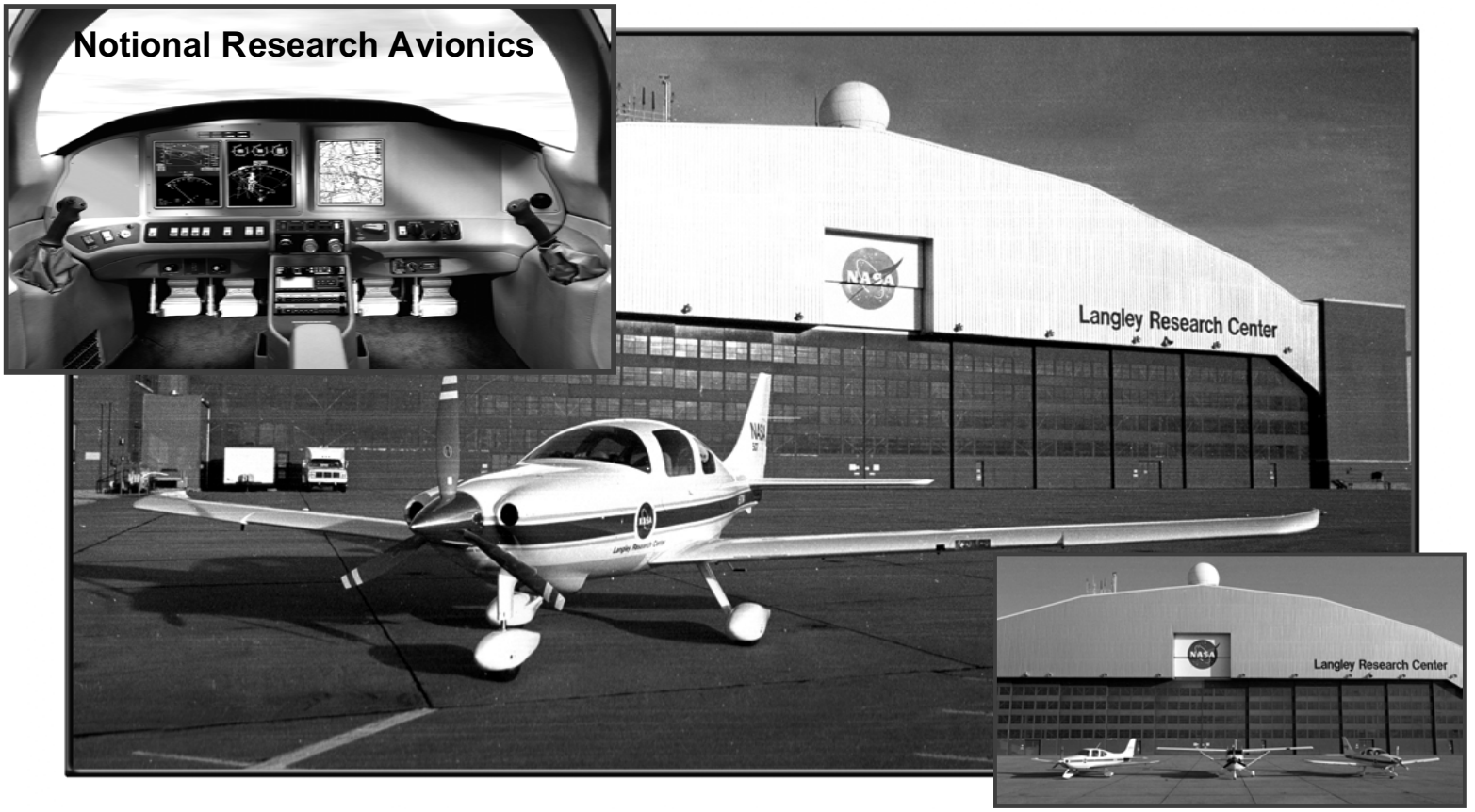
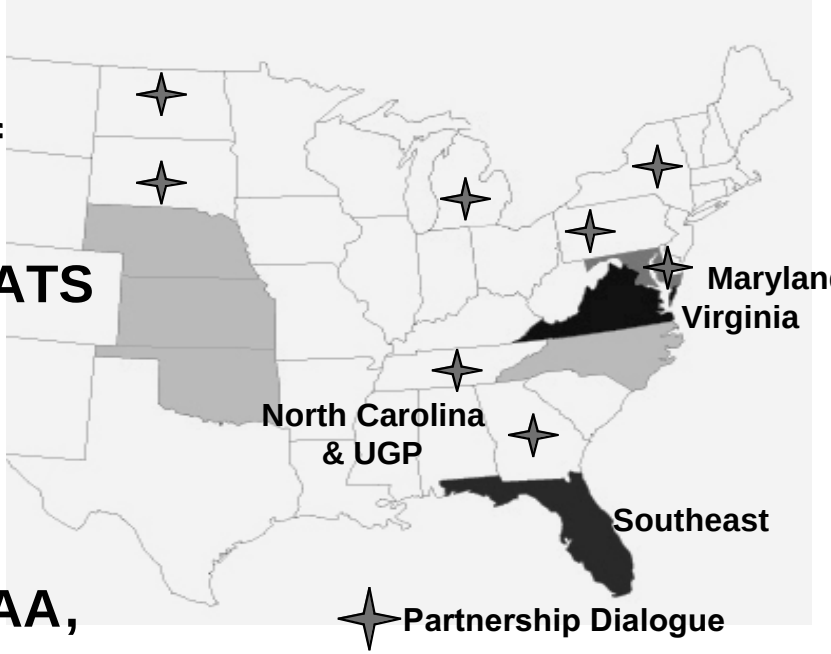


Figure 11

2005 Demonstration Planning

What-

- NASA-led technical demonstration of integrated operating capabilities
- NCAM-led public demonstration of SATS transportation services



Where-

- NASA demonstration to Congress, FAA, industry convenient to DC
- NCAM demonstrations in states/regions funded by members

Why-

- Support for certification & regulatory needs
- Decisions on next steps on the Roadmaps

Figure 12

SATS Roadmaps

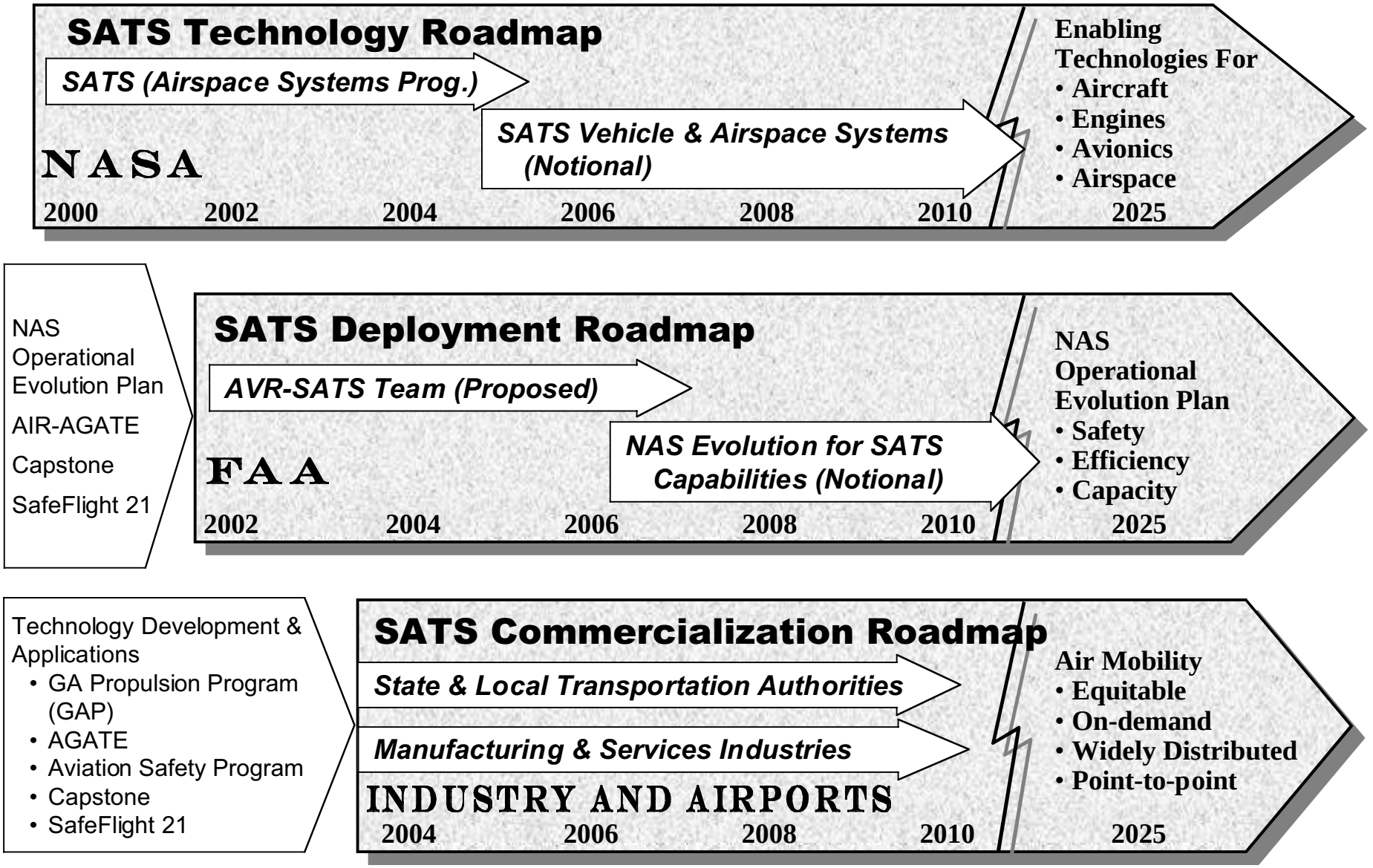
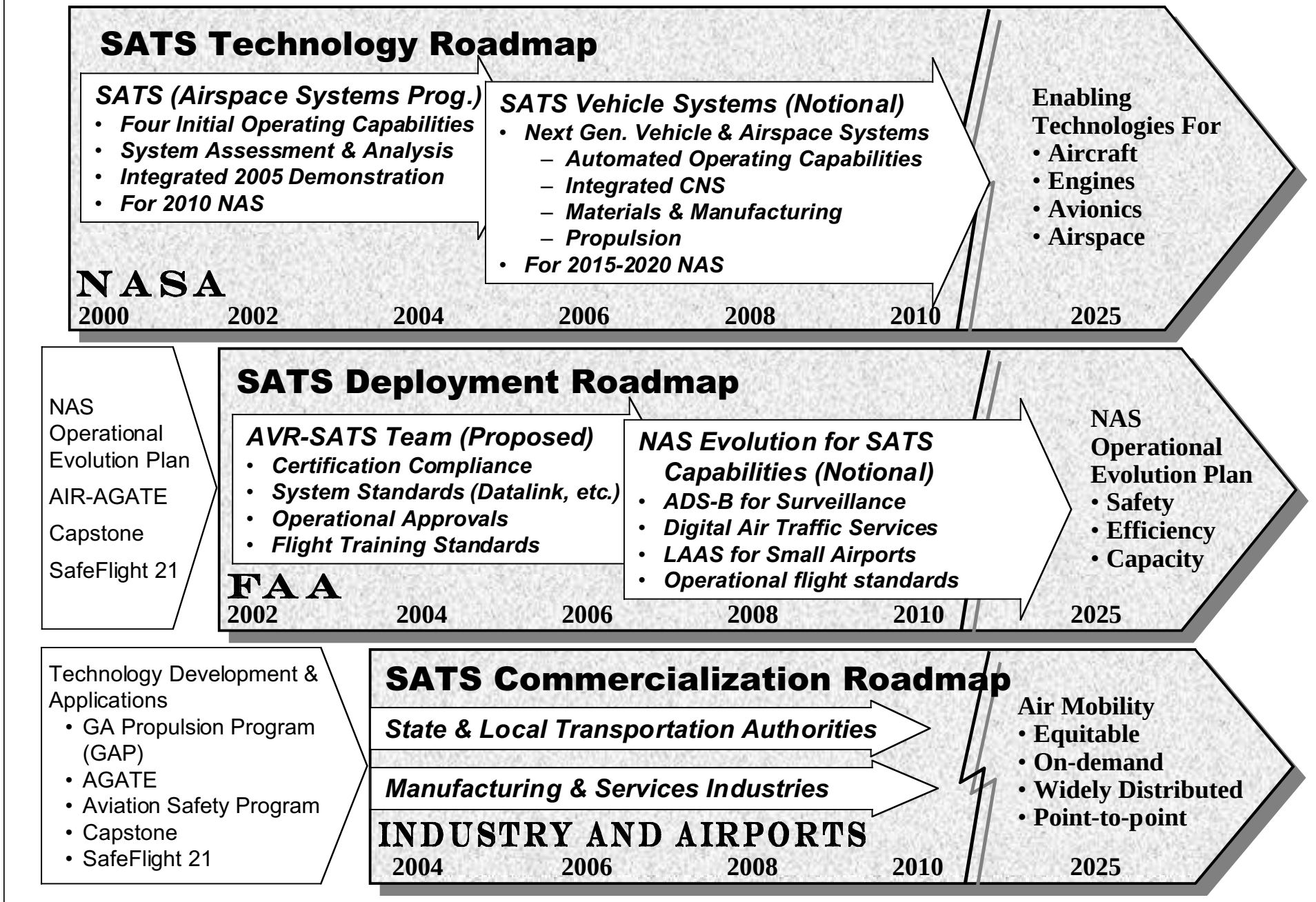


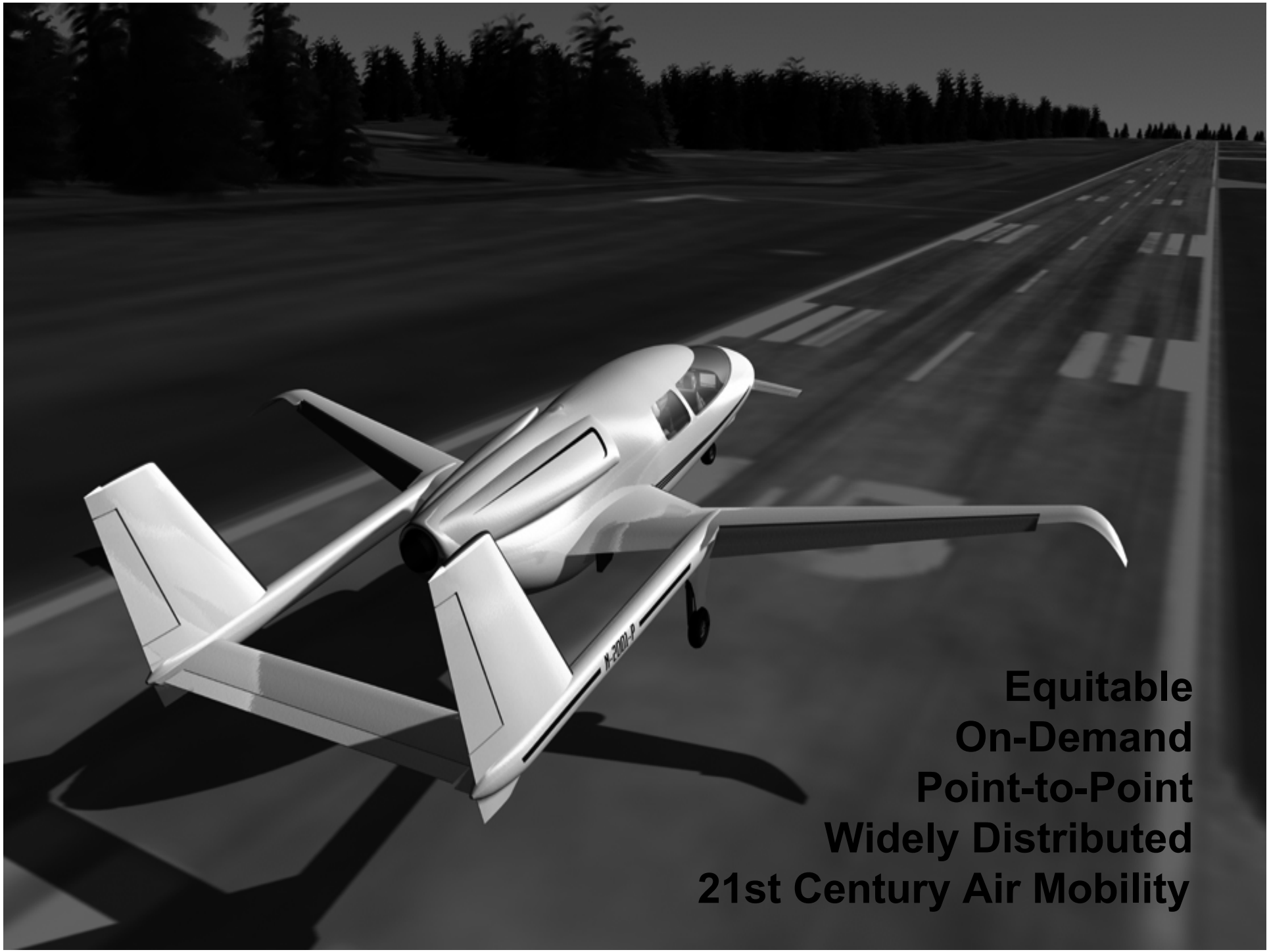
Figure 13

SATS Roadmaps



Messages

- **The NASA Aviation Blueprint:**
  Cost of Inaction is Unacceptable
- **The leading indicators support the NASA technology strategy:**
  State & Local Needs, Manufacturers &Transportation Services
  Industry Business Plans, NAS Evolution, Mobility Challenges
- **Current SATS proof of concept R&D program:**
  A down payment on the vision
- **Roadmaps Require National Coordination:**
  Technology, Deployment, and Commercialization
- **NCAM - NASA Alliance:**
  Collaborative, open, cost-sharing public-private alliance


Equitable
On-Demand
Point-to-Point
Widely Distributed
21st Century Air Mobility